

AMENDMENTS TO THE CLAIMS:

Please replace the claims with the claims provided in the listing below wherein status, amendments, additions and cancellations are indicated.

1-2. (Cancelled)

3. (Currently amended) A method for processing a metal body according to claim ~~[[2]]~~38, wherein the metal body is moved along the extending direction and, at the same time, the non-low deformation resistance region is formed by the non-low deformation resistance region forming means along side peripheries of the low deformation resistance region at a downstream side in the moving direction.

4. (Currently amended) A method for processing a metal body according to claim ~~[[1]]~~38, wherein the non-low deformation resistance region forming means includes cooling means which cools the metal body.

5-25. (Cancelled).

26. (Currently amended) A method for processing a metal body, comprising:

turning a metal structure of the metal body into a finer grain structure by forming a low deformation resistance region which traverses the metal body by locally lowering the deformation resistance of a metal body which extends in one direction and by deforming the low deformation resistance region by shearing;

forming a non-low deformation resistance region along at least one side periphery of the low deformation resistance region by increasing the deformation resistance which is lowered in the low deformation resistance region using a non-low deformation resistance region forming means; and

according to claim 24, wherein the performing aging treatment is performed by maintaining the metal body at a temperature which does not turn the metal structure into coarser grain structure in locally lowering the deformation resistance after the metal structure is subjected to the plastic forming.

27. (Currently amended) A method for processing a metal body according to claim [[1]] 38, wherein the metal body is subjected to the carburizing treatment.

28-35. (Cancelled)

36. (Currently amended) A method for processing a metal body according to claim [[1]] 38, wherein the low deformation resistance region traverses the metal body, and one of non-low deformation resistance regions of the metal body which

sandwich the low deformation resistance region has a position thereof fluctuated relative to another non-low deformation resistance region is fluctuated thus deforming the low deformation resistance region by shearing.

37. (Currently amended) A method for processing a metal body, comprising:

turning a metal structure of the metal body into a finer grain structure by forming a low deformation resistance region which traverses the metal body by locally lowering the deformation resistance of a metal body which extends in one direction and by deforming the low deformation resistance region by shearing, said deforming the low deformation resistance region by shearing including imparting a
~~according to claim 36, wherein the fluctuation of the position is a vibratory motion having vibratory motion components which allow the vibratory motion of one non-low deformation resistance region relative to another~~ to the non-low deformation resistance region; ~~and in the direction substantially orthogonal to the extending direction of the metal body~~

forming a non-low deformation resistance region along at least one side periphery of the low deformation resistance region by increasing the deformation resistance which is lowered in the low deformation resistance region using a non-low deformation resistance region forming means.

38. (Currently amended) A method for processing a metal body, comprising:

turning the metal structure of the metal body into a finer grain structure by forming a low deformation resistance region which traverses the metal body by locally lowering the deformation resistance of a metal body which extends in one direction and by deforming the low deformation resistance region by shearing, said deforming the low deformation resistance region by shearing including imparting according to claim 36, wherein the fluctuation of the position is a one-way rotational motion which allows the rotation of one non-low deformation resistance region relative to another to the non-low deformation resistance region; and about a rotary axis which is arranged substantially parallel to the extending direction of the metal body

forming a non-low deformation resistance region along at least one side periphery of the low deformation resistance region by increasing the deformation resistance which is lowered in the low deformation resistance region using a non-low deformation resistance region forming means.

39-85. (Cancelled)

86. (New) A method of processing a metal body, comprising:

creating a low deformation resistance region in which a deformation

resistance is locally lowered in the metal body;

creating a first non-low deformation resistance region and a second non-low deformation resistance region in which an increased deformation resistance in the each of the first non-low deformation resistance region and the second non-low deformation resistance region is greater than the deformation resistance in the low deformation resistance region, said low deformation resistance region being interposed between said first and second non-low deformation resistance regions; and

deforming the low deformation resistance region by shearing to convert a metal structure of the metal body originally present in the metal structure into a relatively finer grain structure, said deforming including at least one of rotating said first region non-low deformation resistance region relative to said second non-low deformation resistance region or displacing, by vibration, said first region non-low deformation resistance region relative to said second non-low deformation resistance region.